

REMARKS

Claims 1-43 are pending. Claims 12, 13, 36 and 37 are objected to. Claims 1-11, 14-35, and 38-43 are rejected.

Claims 1, 7, 10, 16, 20-22, 26, 30, 32, 33, and 43 have been amended and are discussed below. Claims 9 and 31 have been cancelled. Claims 44-58 have been added. No new matter has been added.

Examiner Interview

The Applicant wishes to thank the Examiner for the interview on August 17, 2004. The Examiner noted that Tsubaki does not teach a hydrophilic layer or a combined hydrophilic and hydrophobic layer as recited in the present application. Additionally, the Examiner and the Applicant's representative discussed typographical and grammatical amendments to the specification. As requested by the Examiner, these amendments have been submitted herewith.

Finality of Office Action

On page 2, the Office Action states that "[t]his action is not made final." As discussed in the interview and in a teleconference on April 13, 2004, the Office Action Summary should also state that the Action is non-final. The Applicant therefore requests withdrawal of the finality of the Office Action.

Objection to Claims 12, 13, 36 and 37

The Examiner has indicated that claims 12, 13, 36 and 37 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The Applicant wishes to thank the Examiner for the indication of allowability of these claims. Accordingly, the Applicant has added new claims 44-47 to rewrite the subject matter of claims 12, 13, 36 and 37, respectively, in independent form.

**Rejection of Claims 1, 2, 4, 6-9, 11, 14, 16, 17, 19, 20,
31, 33-35, 38, 41 and 42 Under 35 U.S.C. § 102(b)**

Claims 1, 2, 4, 6-9, 11, 14, 16, 17, 19, 20, 31, 33-35, 38, 41 and 42 are rejected under 35 U.S.C. § 102(b) as being anticipated by Tsubaki et al. (U.S. Patent No. 5,790,742). Specifically, on page 2, the Office Action states that Tsubaki discloses “an optical fiber comprising ... a cladding layer including silica nano-particles around the core wherein the silica nano-particles are hydrophobic particles.” Additionally, on page 3, the Office Action states that “Tsubaki et al disclose the cladding layer can be made of other materials including silicone resins (see column 6 lines 20-25). Silicon resin surface has a hydrophilic property – OH group exists on the surface.” This rejection is respectfully traversed.

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Tsubaki does not teach each and every element as recited in the claims of the present application. Tsubaki discloses multiple cladding layers in which the cladding layer in direct contact with the core does not contain any hydrophilic nano-particles. In fact, Tsubaki teaches away from a cladding layer having hydrophilic nano-particles. This distinction is noted by the Examiner on page 6 of the Office Action and in the Interview Summary, which states that “Tsubaki et al do not teach the nano-particles are a mixture of hydrophilic and hydrophobic.” Tsubaki also discloses multiple cladding layers wherein the silicon resins are on an outer cladding layer and hydrophobic nano-particles are in an inner cladding layer, and requires at least two cladding layers in order to have a layer of silica aerogel and a silicon hard coating resin. Tsubaki teaches that silicon hard coating resin may be used for any layer other than the outermost layer. Col. 6, lines 20-25. Also, Tsubaki requires that “the outermost layer [is] made up by the said silica aerogel or the said silica aerogel and air.” Col. 5, lines 64-65. Therefore, the silica aerogel and the silicon hard coating resin must be separate and located in at least two different cladding layers.

In contrast thereto, the present application recites a cladding layer in direct contact with the core and having hydrophilic nano-particles. Claim 1, for example,

requires that the cladding layer having nano-particles be proximate the surface of the core. Tsubaki's teaching that the silica aerogel be the outermost layer is inapposite to the present application. Additionally, the present application does not require multiple cladding layers in order to have a layer of hydrophilic nano-particles. As recited in the specification, "there is no need for a separate overlaid layer around the cladding." Para. [0083]. Thus, Tsubaki does not disclose a cladding layer having hydrophilic nano-particles, as recited in claims 1, 16, and 33. Therefore, Tsubaki is an improper reference and claims 1, 16, and 33 should be allowed thereover.

To further clarify these distinctions, claim 1 has been amended to recite "a cladding layer including a plurality of hydrophilic nano-particles proximate the surface of the core." Claims 16 and 33 have been similarly amended. Similarly, claim 48 has also been added to further distinguish the present application. Support for these amendments can be found, for example, in paragraph [0076] of the originally filed application.

Since the limitations of claims 1, 16, and 31 are necessarily incorporated into claims dependent therefrom, claims 2, 4, 6-9, 11, 14, 17, 19, 20, 31, 34, 35, 38, 41 and 42 are allowable for the reasons stated above with respect to claim 1, 16, and 31.

Therefore, Tsubaki is an improper reference because it does not teach each and every element of the present application.

Rejection of Claims 3, 5, 15, 18, 22-30 and 43 Under 35 U.S.C. § 103(a)

Claims 3, 5, 15, 18, 22-30 and 43 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Tsubaki et al. This rejection is respectfully traversed. Tsubaki does not teach the elements of the claimed invention and the deficiencies are not cured by one of ordinary skill in the art.

Tsubaki does not teach or suggest a cladding layer including a plurality of hydrophilic nano-particles proximate the surface of the core and for the reasons set forth above, claims 22, 26, and 43 should be allowed thereover. To further clarify the distinction between Tsubaki and the present application, claims 22, 26, and 43 have been amended to recite that the cladding layer includes "a plurality of hydrophilic nano-particles."

As discussed herein, Tsubaki does not teach or suggest a cladding layer having hydrophilic nano-particles. Claims 22, 26, and 43 are directed to a cladding layer having hydrophilic nano-particles or a cladding layer having hydrophilic and hydrophobic nano-particles. The knowledge of one of ordinary skill in the art does not cure the deficiencies of Tsubaki. Due to the nature of hydrophilic nano-particles attracting water and moisture, one of ordinary skill in the art would not use hydrophilic nano-particles proximate the surface of the core to improve moisture resistance. As a result, Tsubaki is an improper reference and claims 22, 26, and 43 should be allowed thereover.

Since the limitations of claims 1, 16, 22, and 26 are necessarily incorporated into claims dependent therefrom, claims 3, 5, 15, 18, 23-25 and 27-30 are allowable for the reasons stated above with respect to claims 1, 16, 22 and 26.

Rejection of Claims 10, 21 and 32 Under 35 U.S.C. § 103(a)

Claims 10, 21 and 32 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Tsubaki et al. further in view of Arroyo et al. (U.S. Patent No. 5,373,100). This rejection is respectfully traversed.

Since the limitations of claims 1, 16, and 26 are necessarily incorporated into claims dependent therefrom, claims 10, 21, and 32 are allowable for the reasons stated above with respect to claim 1, 16, and 26.

Nevertheless, the combination of Tsubaki and Arroyo does not teach or suggest all the elements of claims 10, 21, and 32. Specifically, Tsubaki and Arroyo do not teach or suggest a cladding layer including hydrophilic nano-particles and “further comprises hydrophobic nano-particles,” as recited in claims 10, 21, and 32. As stated on page 6 of the Office Action, “Tsubaki et al do not teach the nano-particles are a mixture of hydrophilic and hydrophobic.” Arroyo does not cure the deficiencies of Tsubaki.

Arroyo teaches helical wrapping of copper conductors with a hydrophilic yarn. Col. 4, lines 51-65. Arroyo further teaches a hydrophobic water-repelling material between the copper conductors and associated yarn wrapped thereabout. Col. 5, lines 20-25. Arroyo does not teach a mix of hydrophilic and hydrophobic nano-particles.

Further, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to

modify or combine reference teachings. MPEP 2145. The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990); MPEP 2143.01. There is no motivation to combine Tsubaki and Arroyo. Even if Tsubaki and Arroyo could be combined, there is no motivation or suggestion to support such a combination. Specifically, Tsubaki discloses a cladding layer having hydrophobic properties and Arroyo discloses wrapping a hydrophilic yarn. In combination, wrapping the Tsubaki core with a hydrophilic yarn would be undesirable due to the hydrophobic intentions of Tsubaki. Therefore, Tsubaki and Arroyo is an improper combination and claims 10, 21, and 32 should be allowed thereover.

Rejection of Claim 39 Under 35 U.S.C. § 103(a)

Claim 39 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Tsubaki et al. as applied to claim 33 above, and further in view of Kanda et al. (U.S. Patent No. 4,740,055). This rejection is respectfully traversed. Since the limitations of claim 33 are necessarily incorporated into claims dependent therefrom, claim 39 is allowable for the reasons stated above with respect to claim 33.

Rejection of Claim 40 Under 35 U.S.C. § 103(a)

Claim 40 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Tsubaki et al. as applied to claim 33 above, and further in view of Freidinger et al. (DE3909167). This rejection is respectfully traversed. Since the limitations of claim 33 are necessarily incorporated into claims dependent therefrom, claim 40 is allowable for the reasons stated above with respect to claim 33.

Rejection of Claim 42 Under 35 U.S.C. § 103(a)

Claim 42 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Tsubaki et al. as applied to claim 33 above, and further in view of Minemoto et al. (U.S. Patent No. 5,699,461). This rejection is respectfully traversed. Since the limitations of claim 33

are necessarily incorporated into claims dependent therefrom, claim 42 is allowable for the reasons stated above with respect to claim 33.

Nevertheless, Tsubaki and Minemoto do not teach or suggest all of the elements of claim 42. On page 2, the Office Action states that “Tsubaki et al do not positively recite claimed coating methods.” Minemoto also fails to teach or suggest a coating step forming a cladding layer that includes nano-particles, as recited by claim 42.

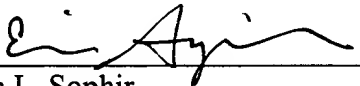
Specifically, Minemoto discloses fine metal particles having a size of 5 to 200 μm . Col. 13, lines 46-54. Thus, Minemoto does not disclose nano-particles. Therefore, Tsubaki and Minemoto is an improper combination and claim 42 should be allowed thereover.

CONCLUSION

Having responded to all objections and rejections, it is respectfully submitted that the application is in condition for allowance and Notice to that effect is solicited. Should the Examiner determine that any further action is necessary to place this application into better form for allowance, the Examiner is encouraged to telephone the undersigned representative at the number listed below. No further fees are believed due. However, if there are any fees due, please charge the same to our Deposit Account No. 50-0653 and reference the attorney docket number above.

Respectfully submitted,

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